

"CLM (09/28/2005)"

51. (New) A method for forming a rectifying junction on an alloy-semiconductor material, the method comprising the steps of:

providing the alloy-semiconductor material having at least a first element and a second element, wherein the alloy-semiconductor has a first region and a second region substantially separated by an intermediate region;

substantially removing the first element from the first region, wherein the removal of the first element from the first region substantially forms a region of substantially enriched material of the second element, and wherein the removal of the first element from the first region substantially forms a negatively doped material in the first region to act as an N-type region;

substantially removing the second element of the second region, wherein the removal of the second element of the second region forms a positively doped material in the second region to act as a P-type region; and

providing a contact on the P-type region, wherein the N-type region, the intermediate region and the P-type region with the contact substantially form a P-I-N rectifying junction.

52. (New) The method of claim 51, wherein the removal of the first element occurs by photo-electrochemical removal.

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55. (New) The method of claim 51, wherein the removal of the second element occurs by etching.

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52. (New) The method of claim 51, wherein the contact is selected from the group consisting of gold, tellurium, or platinum.

55. (New) The method of claim 54, wherein the contact is provided with either vacuum deposited metal or electrodeless chemical exchange methods.